

Development of Sediment Quality Objectives for California Bays and Estuaries

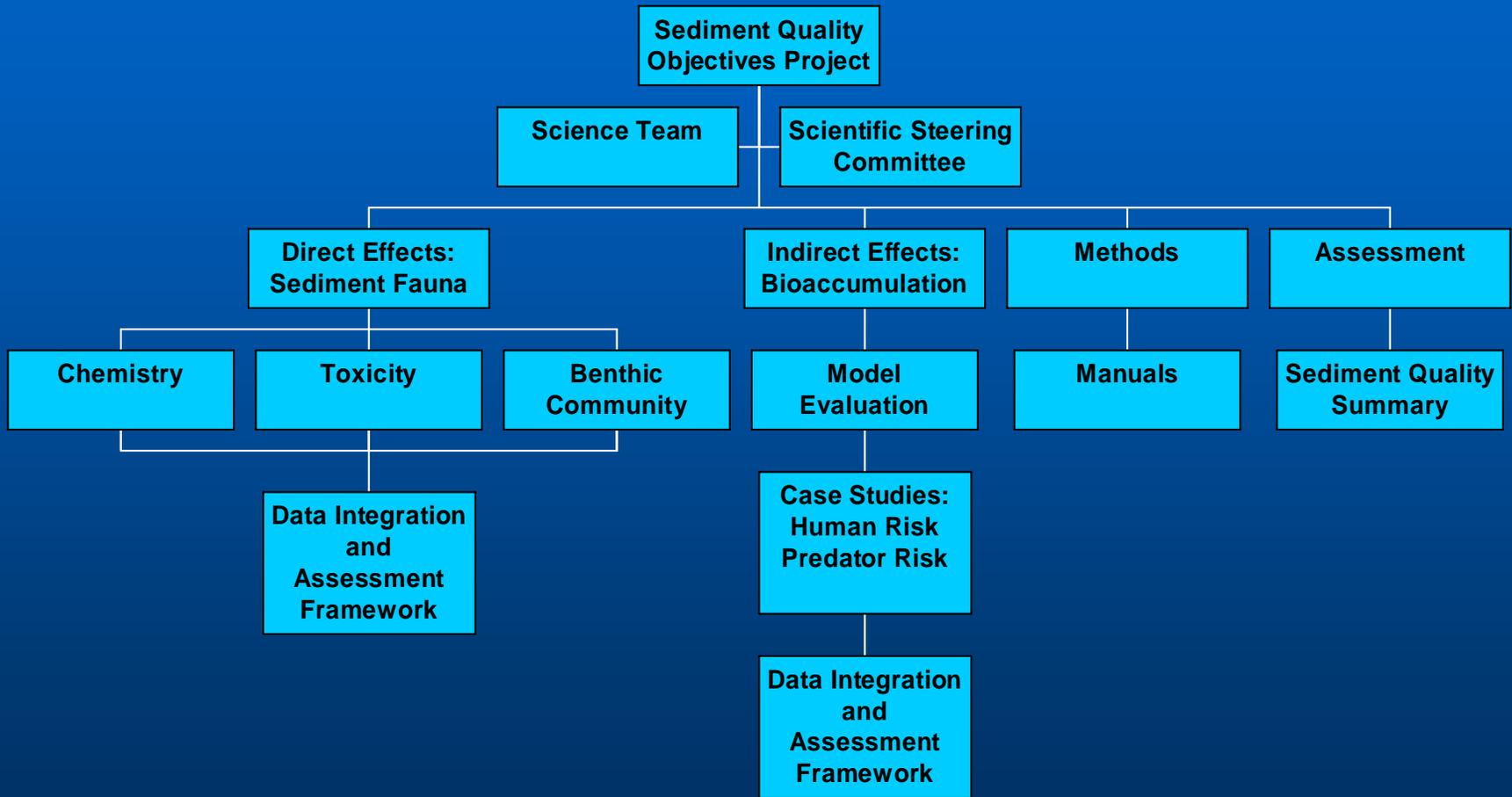
Project Update-February 2005

Steven Bay

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Research Project (SCCWRP)**

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Project Organization



Direct Effects

- **Sediment quality database development**
- **Chemical indicator development**
- **Benthic community assessment tool development**
- **Toxicity indicator development**
- **Integration of triad into objectives**

Database

- **Completed data compilation and QA**
 - Checked every new hand entered study
 - Verified data from pdf reports and electronic files
- **First draft of database distributed in November**
 - Contains highest priority chemistry, bioaccumulation, and toxicity data
 - 150 studies included
- **Revised database in preparation**
 - Clarified chemical analysis methods
 - Standardized toxicity statistics
 - Added habitat descriptors

BAY/ESTUARY SAMPLES IN DATABASE

Regional Board	Chem	Tox	Benthos	Chem + Tox	Chem + Benthos	Tox + Benthos	Chem Tox Benthos
North Coast	6	11	0	22	0	0	34
Central Coast	3	0	0	58	3	0	8
SF Bay	552	19	0	680	37	0	230
Los Angeles	827	11	0	294	15	0	187
Santa Ana	156	8	0	104	0	0	137
San Diego	216	2	0	271	3	0	285

Chemical Indicators

- **Created subsets of data for analysis and validation**
 - Screened chemistry data for quality and completeness
 - Screened toxicity data for quality and test type
- **Data summarization and normalization in progress**
 - Estimation of nondetect and missing data
 - Standardized chemical sums
 - Metal and organic contaminant normalization
- **Investigation of spatial and habitat patterns in chemistry/toxicity relationships underway**
- **Evaluation of existing SQG approaches underway**
- **Calibration of existing SQG approaches underway**

Benthic Community Indicators

- **Final analyses to describe biogeographic patterns underway**
- **Assembling database for index refinement**
 - Bight'03
 - TMDL studies in San Diego Bay, Anaheim Bay, Huntington Harbor
 - Regional monitoring data for San Francisco Bay
- **5 candidates for index refinement and statewide use**
 - SCB E-BRI, SF Bay IBI, BPTCP RBI
 - RIVPACS, Species richness gradient
- **Sample analysis for gear comparison in progress**
 - Screen mesh size: 1.0 mm vs. 0.5 mm
 - Gear type: grab & core

Toxicity Indicators

- **A suite of acute and chronic/sublethal tests has been identified for evaluation**
- **Analysis of chronic test method comparison data nearly complete**
 - Presented preliminary results at SETAC national conference in November
 - Each of candidate methods under further evaluation
- **Preparing for interlaboratory comparison studies to be conducted in April-May.**
 - Document test comparability among labs
 - Comparative sensitivity among tests

Candidate Toxicity Indicators

- **Acute/survival**
 - Multiple species of amphipods
 - Widely used in California
- **Short-term/embryo development and fertilization**
 - Sea urchins and mussels
 - Frequently used in California
 - Various test matrices: pore water, elutriate, sediment-water interface
- **Chronic/sublethal response**
 - Amphipods, polychaetes, copepods, clams, oyster
 - Usually species with limited use in California
 - Limited information on feasibility and sensitivity

Indirect Effects Indicators

- **Development of chemistry indicators based on biota-sediment accumulation models**
 - Literature review of effects threshold values for wildlife and fish
 - Data compilation and screening for evaluation of empirical bioaccumulation models
 - Developing sediment-biota regression models for fish and invertebrates

Indirect Effects Indicators

- **Planning committee established to assist in design of case studies**
 - Representatives from:
 - OEHHA, Regional Boards, CA DFG, NOAA, DTSC, EPA, USFWS, Port of Oakland
 - Met in November to discuss key elements
 - Target species
 - Food webs
 - Effects thresholds
- **Mechanistic model parameterization underway**
 - Newport Bay food web development and data compilation
 - Expansion of SF Bay PCB model to additional compounds

Integration of Indicators

- **Developed MLOE work plan based on input from Advisory Committee**
 - Submitted to SSC in January
- **Received comments from SSC in March**
- **Revised work plan prepared and distributed to Advisory Committee**
- **Next SSC meeting on April 7-8**